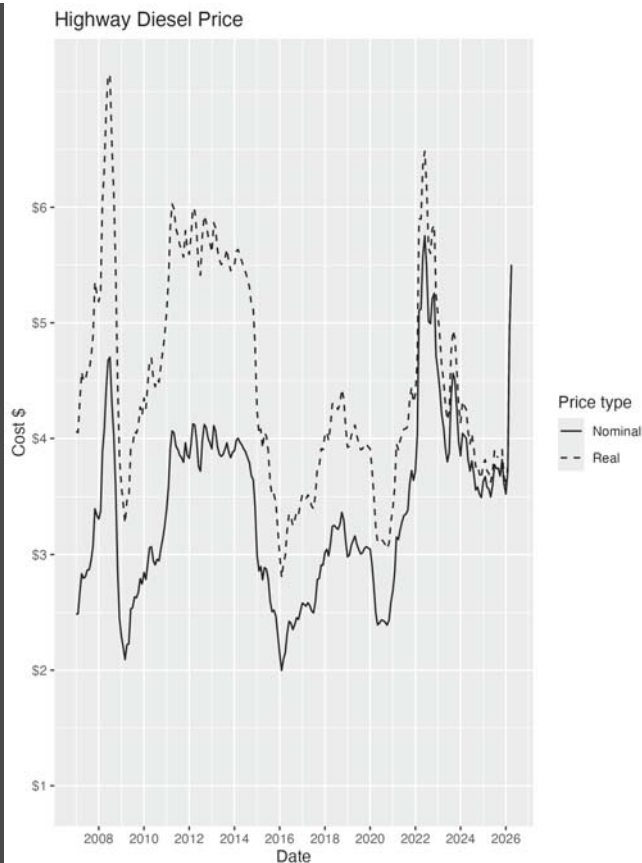


2026 Warm-Weather Wednesday Webinar Series

Fertilizer and Diesel Price Outlook

Gregg Ibendahl - K-State

2026-05-27

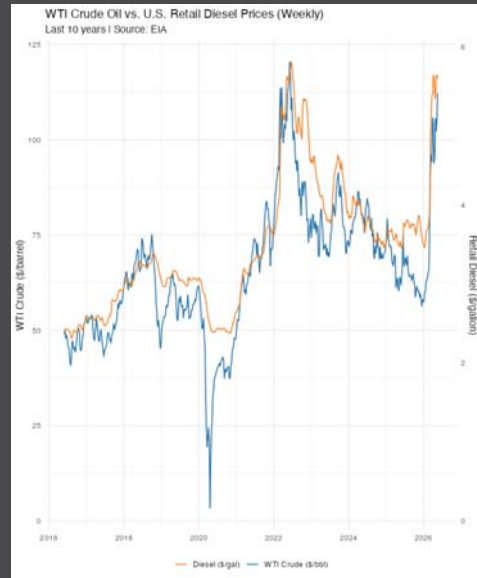
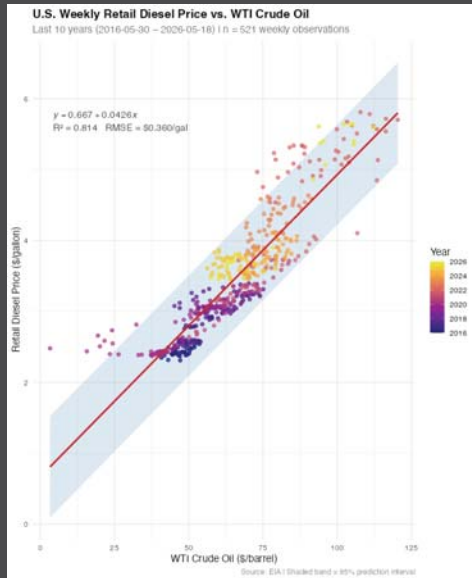


History of Diesel Prices

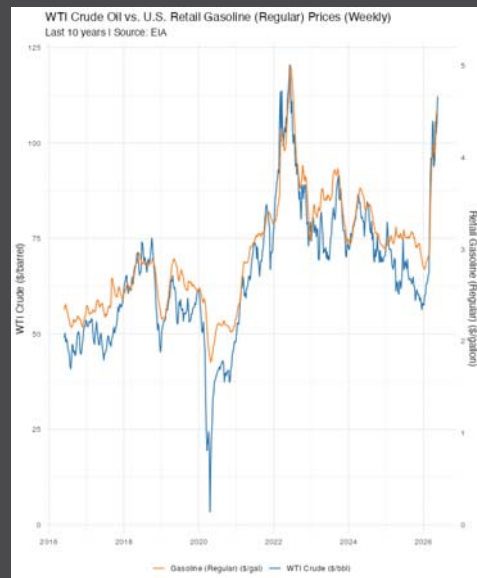
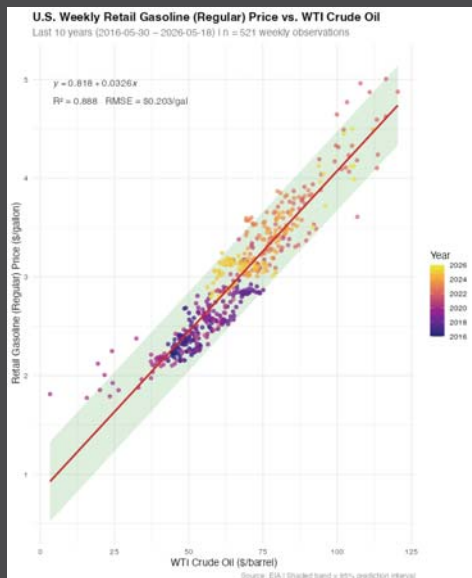
It seems bad now but it has been worse

- Start of Russia/Ukraine war 2/24/2022
- Soaring demand and stagnant production followed by a financial crisis
- 2014 was the start of the shale oil boom in the U.S.

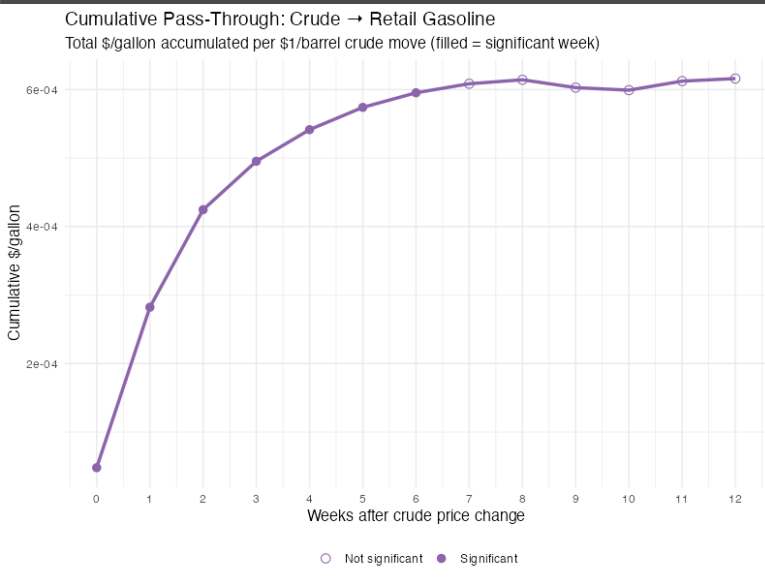
Fuel Prices are Closely Tied to Oil Prices



Gasoline Has an Even Stronger Fit

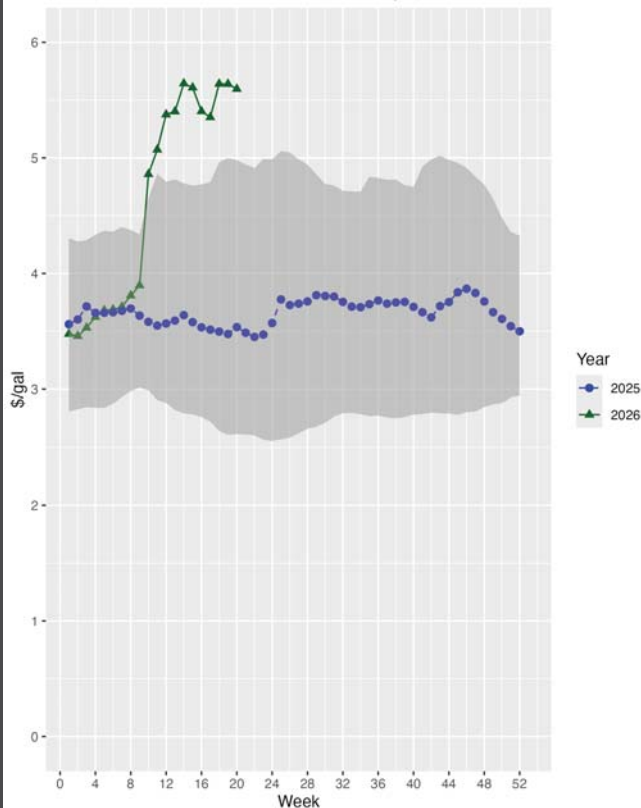


How Quickly do Prices React



The biggest effect in the first week or two
However, it could take 6 weeks before fuel prices fully adjust
Examining the decline side currently
- My initial thought is it takes longer.

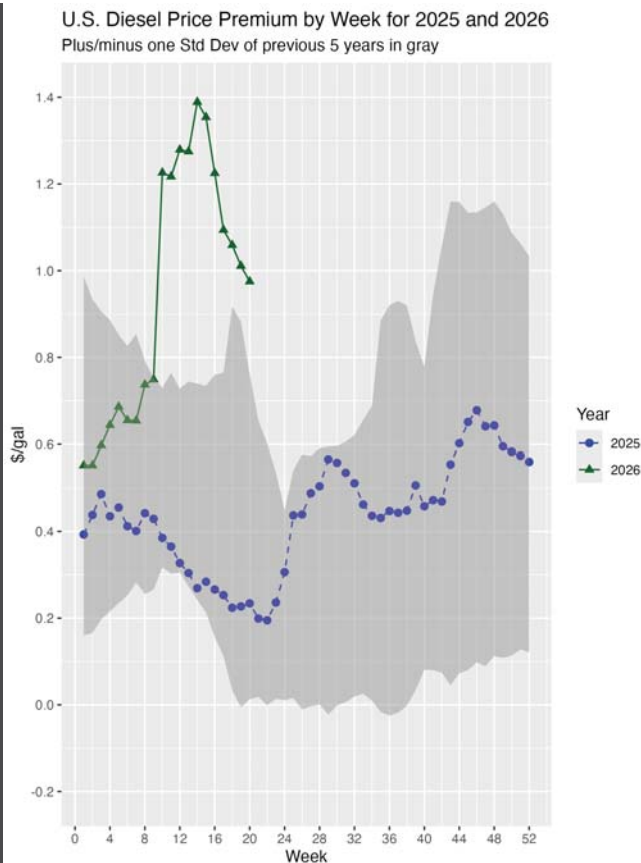
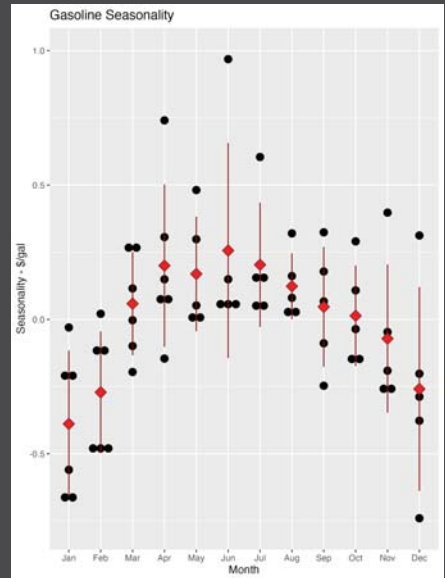
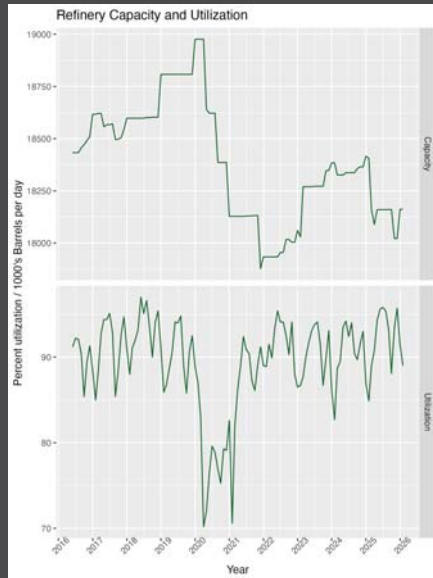
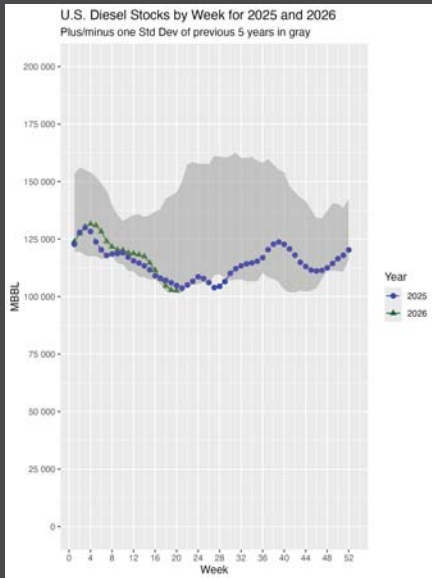
U.S. Highway Diesel Prices by Week for 2025 and 2026
Plus/minus one Std Dev of previous 5 years in gray



Result - A Change in My Estimates

Before the Iran war
- It was looking a lot like 2005
- Relatively low prices
- Gas was under \$2 in January in some places
Now, it's a whole new ball game

Other Contributing Factors



The Diesel Price Premium

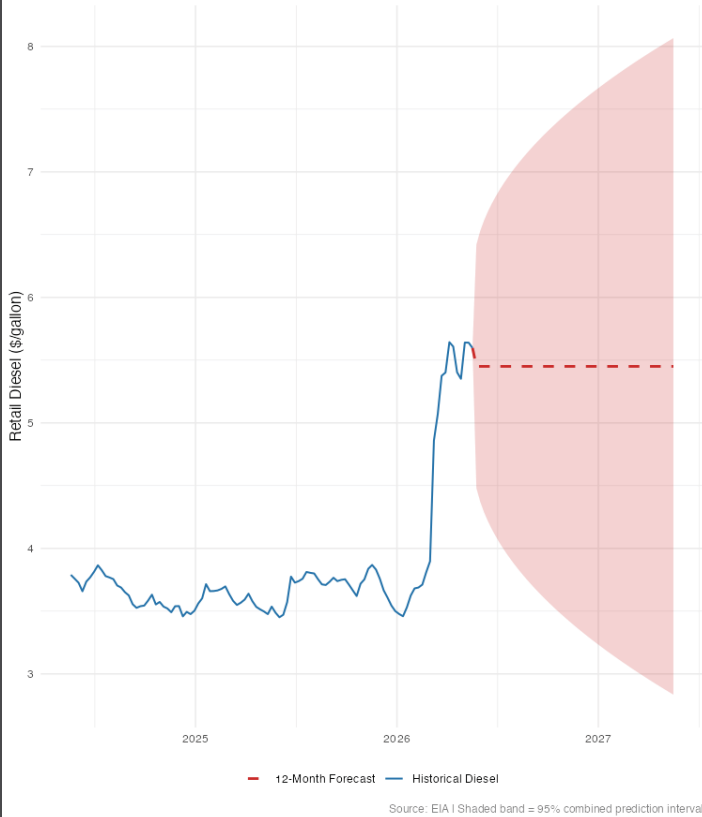
World conflicts seems to make this worse
Change of oil types refined may be a reason as well

- U.S. is set up to refine heavy weight oil
- Refining more of our lighter weight oil yields less diesel

High fuel prices slow down consumer consumption but less diesel consumption
- The cure for high fuel prices is high fuel prices

U.S. Retail Diesel Price: 12-Month Forecast

Forecast derived from ARIMA crude oil projection + OLS regression



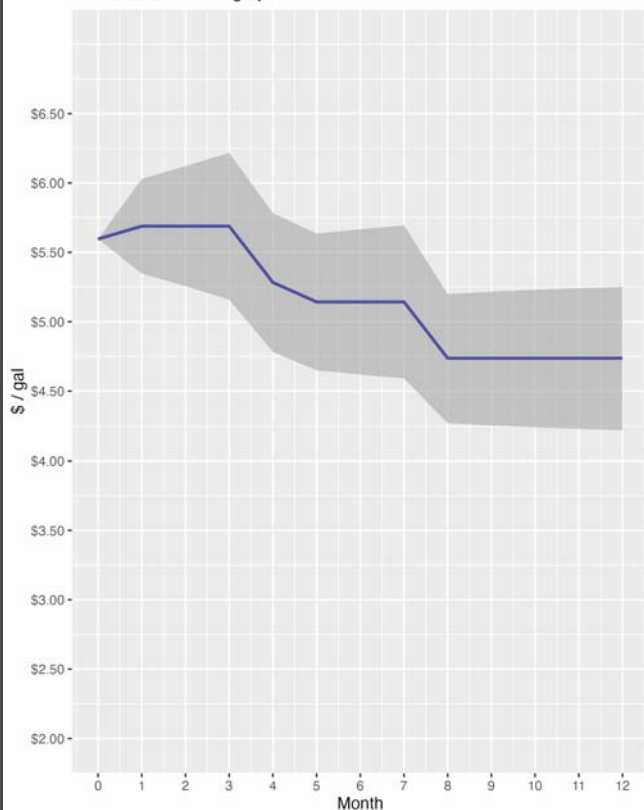
Price Prediction Based on Historical Data

An ARIMA model forecast

- ARIMA (AutoRegressive Integrated Moving Average) is a statistical model used for time series analysis and forecasting future values based on past data. It combines autoregressive and moving average components while addressing non-stationarity through differencing.

- Model needs no additional data
- Not all that useful here

Predicted U.S. Highway Diesel Price for Next 12 Months confidence interval in gray



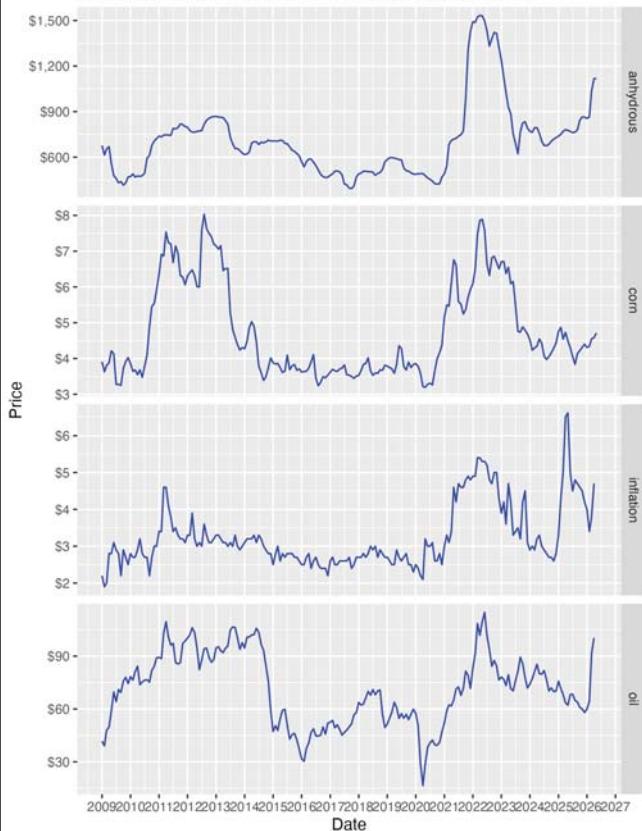
Price Prediction Based on My Estimate of Oil Prices and Diesel Premium

What I'm assuming

- Oil prices remaining high for the next 12 months
- Maybe a decline to low 90's
- Diesel Premium remaining elevated
- Maybe some decline in price premium

Outlook for Fertilizer

Historical Anhydrous, Corn, Inflation, and Oil Prices

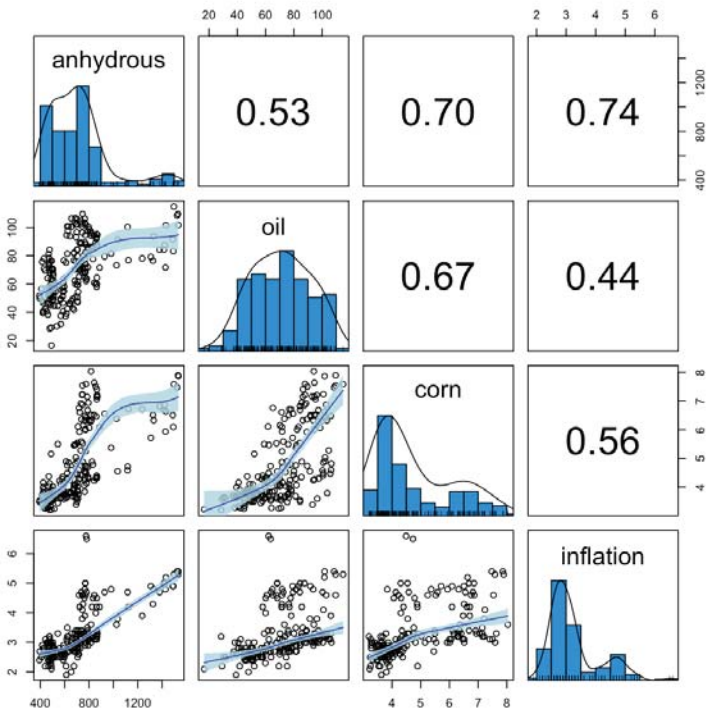


Modeling Anhydrous

3-factor model

- Corn price - Demand factor
- Oil price - Supply factor
- Inflation - Added a few years back to help improve model

Most fertilizer prices track the AA price very closely



Which Factors are the Strongest

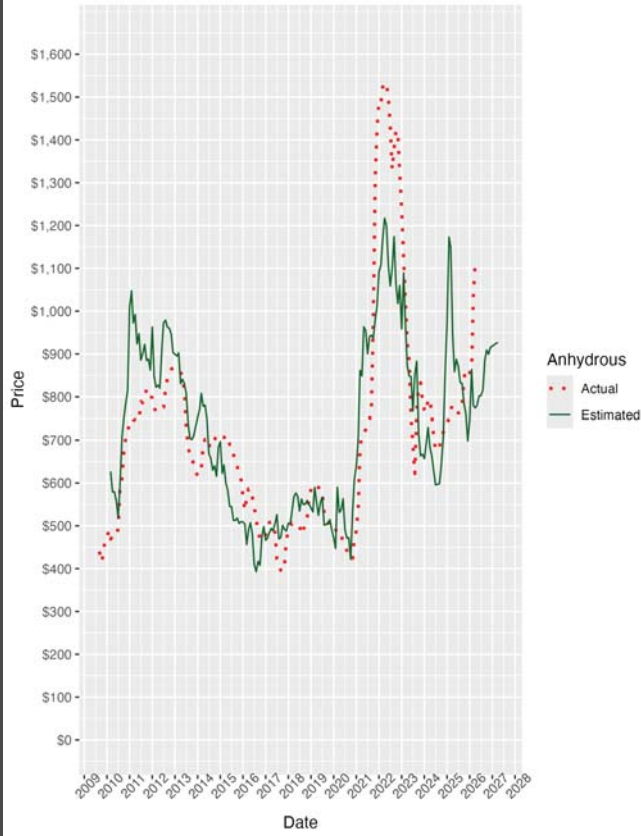
Anticipated inflation has the highest R-squared
 Oil has the lowest
 However, it looks like oil prices are driving AA prices at the moment

Anhydrous Price Model Summary		
Term	Coefficient	P-value
Intercept	-221.42	< 0.001
Oil lag 6 mo	2.45	< 0.001
Corn	65.54	< 0.001
Inflation lead 2 mo	136.46	< 0.001

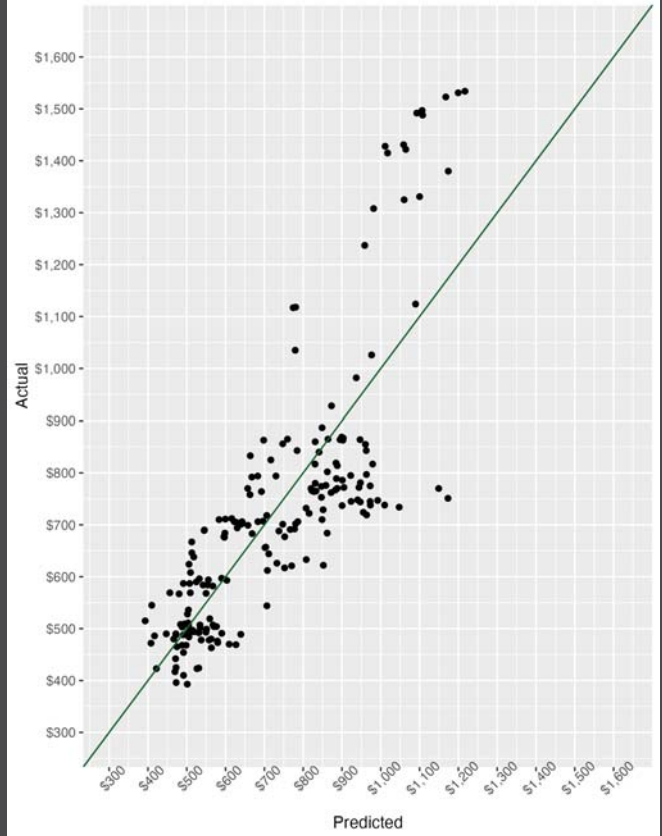
How Has the Model Worked

R-Square values normally in the 0.7 range
 Less reliable in the current environment
 - I'm experimenting with other leads and lags
 - Forecast is behind the actual price
 - AA prices moved almost in step with oil price

Anhydrous Price - Actual vs Predicted



Anhydrous Price Scatterplot of Actual vs Predicted

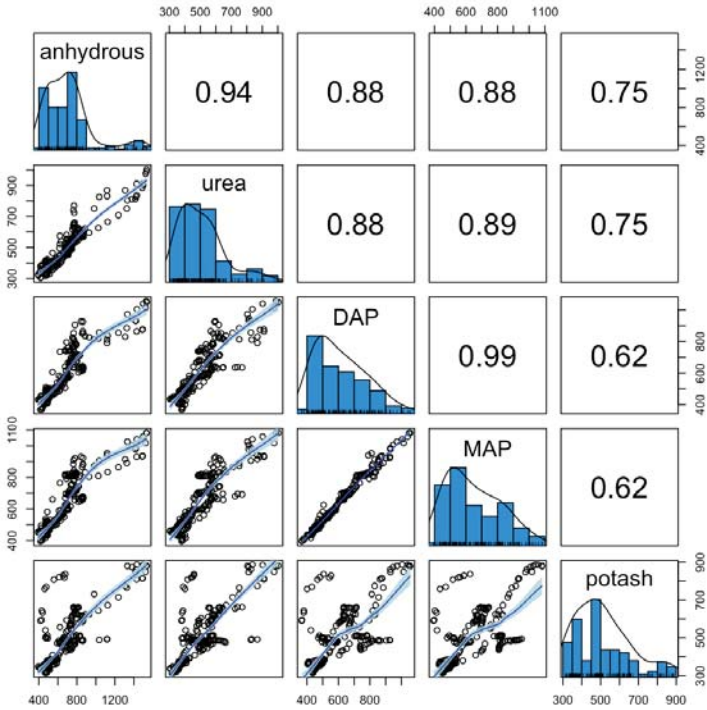


More Price Volatility Now

The last few months have seen more price volatility

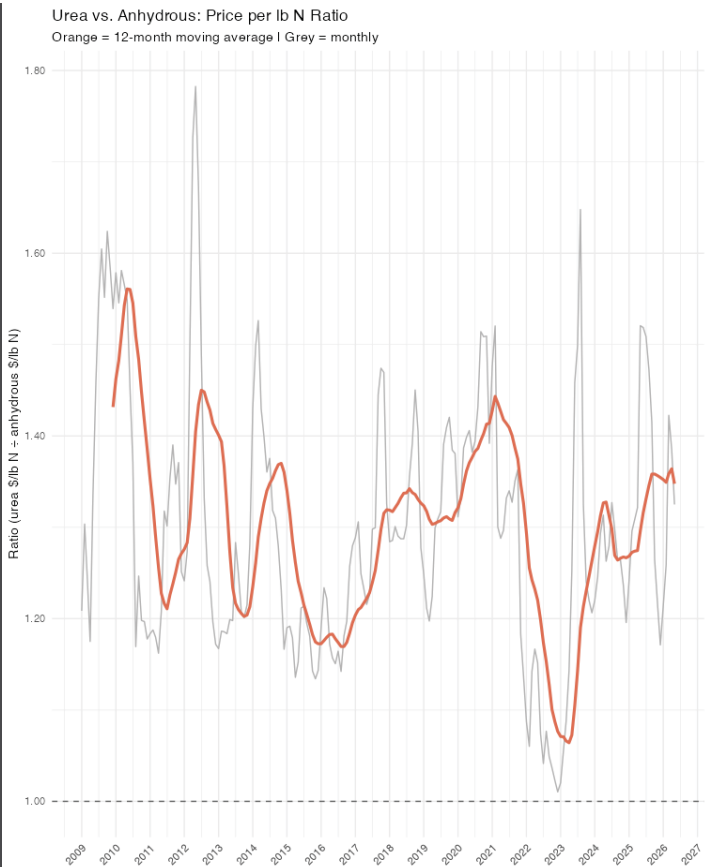
- Perhaps farmers pre-purchasing last fall so suppliers didn't need to stock?





Do Other Fertilizers Track AA Prices

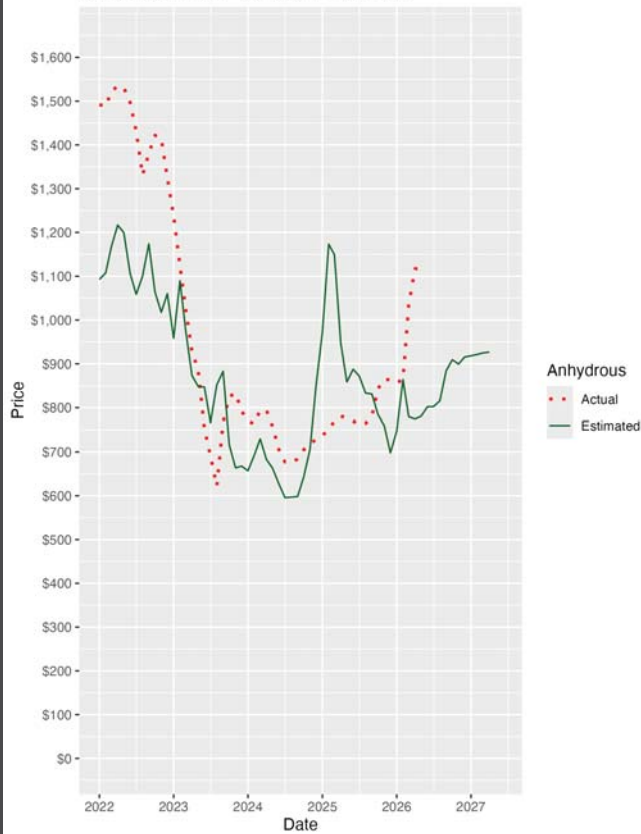
All fertilizers are highly correlated
 - Even the non-N or partial N fertilizers
 The all N products are the most correlated



Has Urea Become Overpriced

Graph of price per pound of N for Urea and AA
 Gray lines are monthly while red line is 12-month moving average
 As expected urea is more expensive
 However
 - From a historical perspective is within the normal pricing range
 - Compared to the end of the year, urea has become more expensive relative to AA but at the end of the urea, urea was relative cheap compared to AA

Anhydrous Price - Actual vs Predicted

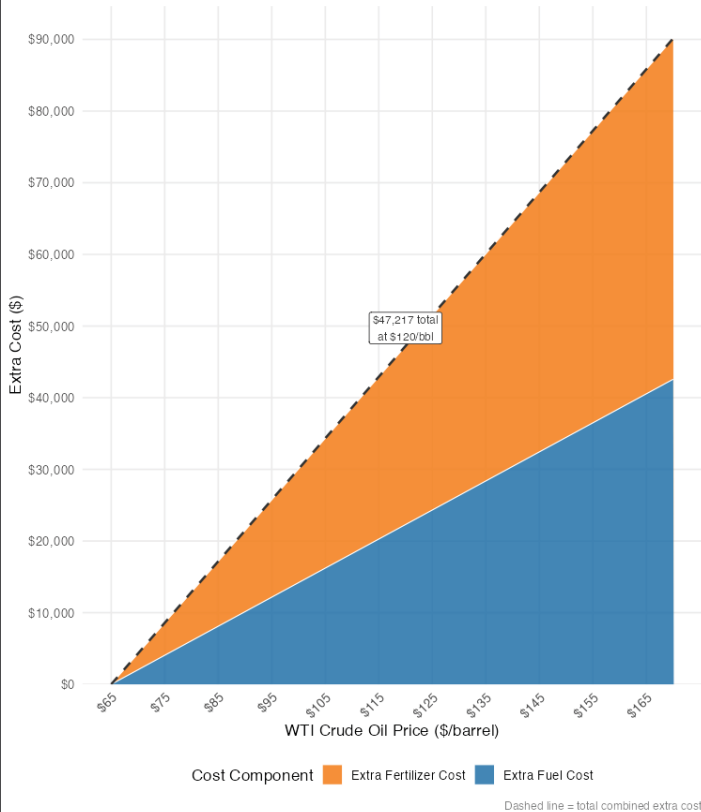


Model Predictions

Model is currently underestimating actual prices.
 However, it is showing another \$150 price increase in AA
 Model is currently using a 6 month oil lag
 - Some of my current modeling is suggesting an 11 month lag
 Implications of oil price lag
 - It could take 6 months to a year once oil prices decline before fertilizer prices decline
 - 2027 could be a very expensive year for farmers.

Extra Farm Input Costs vs. WTI Crude Oil Price

Incremental fuel and fertilizer costs above the \$65/barrel baseline



How Much is This Costing Farmers

Estimate based on KFMA data and average grain farm
 - includes both fuel cost and effect on fertilizer prices
 - The fertilizer effect is the biggest

Questions?

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